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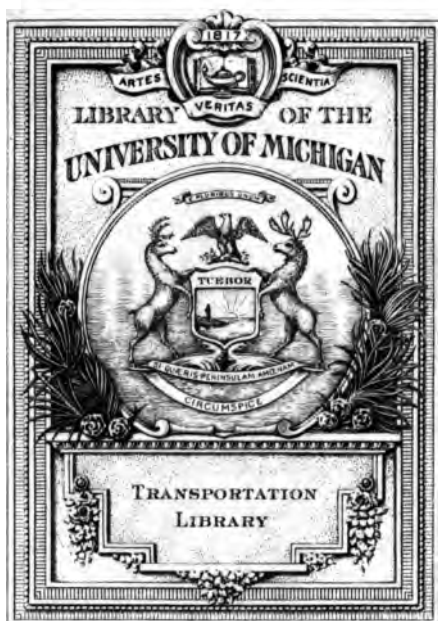
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RAILROADS.

STATEMENTS AND REFLECTIONS

THEREON :

PARTICULARLY WITH REFERENCE TO THE PROPOSED

RAILROAD WITHOUT A TUNNEL,

AND THE

COMPETITION FOR THE LINE

BETWEEN

LONDON AND BRIGHTON.

BY

A SHAREHOLDER,

AT THE REQUEST OF OTHER SHAREHOLDERS.

JUNE 4, 1836.



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LONDON AND BRIGHTON RAILROAD.

THE LINE WITHOUT A TUNNEL.

“RAILROADS FOR EVER!” is the name of a very lively farce which has been produced this season at the Haymarket Theatre; and, seriously considering the question, we may well say that, whether Railroads may last for ever, or, centuries hence, be superseded by some nobler achievement of human ingenuity and science, they *now* claim, in union with the almost supernatural powers of steam, the fixed attention and consideration of the civilized world. What changes they must make on the face of the earth and the condition of its inhabitant, man, within even a few years, is, as yet, but a vague dream; and we can only predicate that they will be extraordinary, beyond the circle which strong speculative judgment can foresee, or vivid imagination fancy. Truth has been philosophically defined to be more strange than fiction: and not only in the future prospects of Railroads but in their existing struggles, we will venture to state that the realities will be, and are, more strange than romance. But into the future we cannot pretend to penetrate, and the present—a *very small section of the present*—is of necessity, as well as by choice, our theme.

These introductory remarks are written in the hope of inducing the general reader, and parties interested, to devote a short time to the perusal of the proceedings before the Committee appointed by the House of Commons to investigate and

report upon the competing lines for a Railroad between London and Brighton :—London the most populous city of Europe ; Brighton the nearest and readiest sea-town where the population of that vast metropolis may seek interludes of repose or enjoyment from the cares of business, the fatigues of professional duties, and the toils of every-coloured occupation of life. The question is, therefore, one of more than common or local importance ; and, upon its just decision hangs the fate of Brighton as a pleasurable resort, the comfort and conveniency of countless numbers of the residents of London, and a very considerable portion of national benefit and prosperity.

But without endeavouring to attach undue consequence to this matter, we beg leave to set out by frankly declaring ourselves to be entirely convinced of the superiority of the cause we have adopted, and that our object is to shew the public the grounds on which our judgment is formed, in the hope that the public must feel with us and coalesce in the same conclusion. Let us also, in like honest frankness, be fairly understood to aim at the attainment of a general good, in a concern where our individual interest is, indeed, of the slightest moment. Though we are advocates, we are unbiassed by private views ; and our single wish is to place the whole of this contest so clearly before the public as to lead to a final determination for the public advantage.

The early history of this competition, though not the main concern as far as the public is interested, is, notwithstanding, so favourable to one of the parties and so unfavourable to another, that we cannot help briefly mentioning its principal feature as an appeal to English justice. Mr. Cundy, Sir John Rennie, and Mr. Vignolles originally surveyed and proposed different lines as the best, and likely to be the most profitable, for railroad intercourse between

London and Brighton. Their competition led to a reference, and their referee was Mr. Stephenson ; to whom they paid a fee of one hundred pounds, binding themselves to abide by his decision upon the preferable line. The referee seems to have gravely realised the burlesque :

Thus have I seen two dogs fight for a bone ;
 Bye came another dog, and took it for his own ;
 So this here dog had all, and them there dogs had none.

Mr. Stephenson intimated to Sir John Rennie and Mr. Vignolles, that they were on utterly bad and untenable ground ; and to Mr. Cundy he intimated nothing. He was the dog from whom he projected carrying off the bone ; and for nearly thirteen months Mr. Cundy had his papers and plans withheld, and could only surmise there were no solid objections against him, from observing that his rivals had been hinted from the field. He could not be aware that all this while his honourable referee was constructing a Railroad to be called his own projection, founded on the materials he had furnished. Yet such was the case. Mr. Robert Stephenson *junior* (not the eminent engineer of that name, though *he* has lent it not very creditably to the job) astonished the world by producing *his line* ; his line being simply a serpentine screw upon Mr. Cundy's, adopting all its principal parts, leaving it only for the sake of departure, and generally to great disadvantage ; and the whole concocted by Mr. Bidder, the famous calculating boy, upon whom, though not an engineer or surveyor at all, Mr. Robert Stephenson, having the light of Mr. Cundy's genius before him, reckoned he might safely calculate for ousting that able and ingenious person from his just position. It was a shameful attempt ; and it has been, throughout, shamefully supported. The umpire turned into a competitor, it may readily be supposed, would

stick at no means to effect an object in the carrying or bare contemplation of which it was a disgrace to engage.

What steps were taken to disembarass a Committee of preceding ties and pledges, it is not for us to conjecture: we can merely state the fact, that a very propitious change was effected by and for Mr. Stephenson; and that he had the high good fortune to find his (*his!*) project, levels, sections, assents, tunnels, embankments, bridges, cuttings, gradients, termini, &c. &c. in a transcendent degree of favour with a majority of those on whose Report his design must stand or fall. Meanwhile Mr. Cundy, whose sole merit was that of having the first, original, and best line, was thrown completely into shade, or, to use a turf phrase, was jockeyed off the course. To be sure, he had the reputation of having the most skilful eye for taking up and marking out a country (for the application of Railroad intercourse), among the able body of English engineers; but then, he had no connexion with the Stock Exchange, and scrip and omnium were terms unknown to his science. His scrip was public utility; his omnium the most safe and perfect conveyance between London and the coast, without the horrors of tunnelling; and his premium, the approbation which must reward the execution of such a work. Mr. Stephenson was lucky in a conjunction with Mr. Isaac Lyon Goldsmid, who possesses some improvable property on the west side of Brighton, and very great influence in the money market, as the gambling in Sweeting's Alley is somewhat shamble-like and derogatorily denominated.

With Mr. Cundy, a Railroad to Brighton was *simply* looked upon as a public work: with Messrs. Stephenson and Goldsmid, it assumed the more profitable capabilities of an excellent stock-jobbing speculation; and it has been wrought accordingly. But this will be made more manifest.

hereafter, when we come to note certain parts and transactions as we go on; and, in the meantime, we shall proceed to lay before our readers such of the speeches of counsel and portions of evidence as bear most clearly upon the case, with the preface of a plain general statement, demonstrating the conclusive merits of the "London and Shoreham line."

Of the three propositions before the Committee of the House of Commons, viz. Sir John Rennie's, Mr. Stephenson's, and Mr. Cundy's, it is irrefragable that *the first* is inferior to the other two, on account of the great length of its tunnels, and the dangerous steepness of its inclined planes. Including Shoreham, it is $55\frac{1}{2}$ miles in length, and has *no fewer than five tunnels*; delightful specimens of Tartarus, by way of preparing visitors for the Elysium of Brighton. It presents, besides, 22 undulating inclined planes, of which 6 rise 20 feet per mile, for the distance of 22 miles and 23 chains, and require the power of 17 lbs. per ton to work them 15 miles per hour, or 89 minutes. Another of these planes is 1 mile 60 chains, with a rise of 47 feet per mile, and will require a station engine and a power of 29 lbs. per ton, to work it 9 miles per hour, or $18\frac{1}{2}$ minutes: the whole together making 24 miles 3 chains, or $107\frac{1}{2}$ minutes. The remaining 31 miles 37 chains may be travelled at the average of 30 miles an hour, or $63\frac{1}{2}$ minutes.

Consequently, a well-constructed engine of 10 tons, or 10 horse-power, would take 10 carriages with 180 passengers, or 20 tons of goods, between London and Brighton and Shoreham, in 2 hours and 51 minutes, at the cost of 2s. 6d. per ton.*

The second, or Mr. Stephenson's line, is 56 miles 51 chains, and has *only four tunnels*—one fewer than Sir John Rennie's. It also contains 22 undulating planes, of which

* In Railway fares, a passenger is reckoned equal to a ton of goods.

5 rise 16 feet per mile, making the speed of 28 miles of the road 17 miles per hour, or $97\frac{1}{2}$ minutes. One plane of 1 mile 12 chains rises $16\frac{1}{10}$ per mile, the speed $16\frac{1}{2}$, and 3 minutes; and the remaining $27\frac{1}{2}$ miles may be traversed at the rate of 30 miles per hour, or 55 minutes.

Consequently, an engine of 8 tons, or 8 horse power, would take 10 carriages with 180 passengers, or 20 tons of goods, between London and Brighton and Shoreham in 2 hours $35\frac{1}{2}$ minutes, at the cost of 2s. 3d. per each ton, or per passenger.

The third, or Mr. Cundy's line (with the terminus near St. Peter's Church), is 54 miles 60 chains, *without a tunnel*. It contains only 6 inclined planes, the steepest of which is 15 feet per mile for $7\frac{1}{2}$ miles, the speed 18 miles in 1 hour 22 minutes. Another has a rise of $14\frac{1}{2}$ feet per mile, speed 18 miles per hour for 9 miles; and the remaining gradients are 10 miles 3 chains, on which the rise is $11\frac{3}{10}$ feet per mile; 11 miles 3 chains, on which the rise is 7 feet 6 inches per mile; 5 miles 1 chain of level; and 10 miles 60 chains with a rise of 5 feet per mile; making together 37 miles 40 chains, at 30 miles per hour of time, or 75 minutes.

Consequently, an engine of 7 tons or 7 horse power, would take 10 carriages with 180 passengers, or 20 tons of goods, between London and Brighton and Shoreham, in 2 hours 7 minutes, at the cost of 2s. 2d. per ton, or per passenger.

With a train of eight, this line could be traversed in 1 hour 37 minutes!

Thus,

Rennie's line, $55\frac{1}{2}$ miles, would require 2 h. 51 min., and cost 2s. 6d. per ton or per passenger.

Stephenson's, 56 miles, would require 2 h. $35\frac{1}{2}$ min., and cost 2s. 3d. ditto.

Cundy's, 54 miles, would require 2 h. 7 min., and cost 2s. 2d. ditto.

AND WITHOUT A TUNNEL.

To shew the wonderful difference which would be made by this apparently slight variation of cost, we may observe, that, taking 12 trains of 20 tons of goods per day, the saving on Mr. Cundy's line would be 3*l.*, and 12 trains of passengers, 27*l.* Thus the public, by its adoption, would gain 30*l.* per day, and averaging 300 days per annum, no less an amount than 9000*l.*; besides saving time, the most precious of all expenditures, escaping the friction of short curves, the extra expense of wear and tear of heavy engines, the peril of steep inclinations, and, above all, the nuisance and danger of miles of dark and noisome tunnelling.

Having thus cleared our way in the principal engineering and obvious economic features of these three plans, we now beg to introduce Mr. Hill's able and convincing speech to the Committee.

“MY LORD.—In obedience to the commands of the Committee, I am called upon, somewhat suddenly, to state the case of the gentlemen whom I represent—the case of those who come forward, with evidence and with arguments, to shew to this Committee, that the best line for the public between Brighton and London—the best line for the intermediate points—is one which you have not yet considered—a line which has been marked out by Mr. Cundy, the Engineer.

“My Lord, I am sure that I shall obtain, and I hope I shall not misuse, the indulgence of the Committee, in the task which has thus suddenly fallen on me. I happened to be in the room when I heard your Lordship state, that about seven days would probably be taken up by Mr. Gibbs in going through his line, but (for reasons which, of course, I can know nothing of, although they had a very sudden operation, it appears, on the mind of Mr. Gibbs; from whence, perhaps, I am entitled to conclude, that they were of a very *forcible* and *conclusive* nature in themselves) Mr. Gibbs has suddenly disappeared from this contest, and I am as suddenly called upon to present to you the case of Mr. Cundy.

My Lord, under these circumstances, I am sure your Lordship will not, nor will the Committee, expect that I can have had time to go through the immense mass of evidence which lies upon your table, to abstract and to separate it into its parts, and to present it to you in a lucid view, in the very short time which I can expect you to give me for such a purpose.

“My Lord, I think that I shall perform my duty (and, I trust, that the Committee will agree with me in this), that I shall perform my duty, not by travelling through the case with very great minuteness, but, by attempting to seize the outline of it, to present that as clearly as I can to the Committee, and to leave that outline to be filled up by the scientific men who will be called upon to prove the facts, and to lay the case before the Committee in the detail which will be necessary for making them perfectly comprehend, and to enable the Committee to see, that it is taken with a sufficient degree of accuracy in every part.

“My Lord, I shall confine myself to attempting to enable the Committee to fulfil the task which the House has thrown upon them—of pointing out to the Legislature the best line for the public between Brighton and London, having that due regard to the interests of the intermediate points, which (though too often lost sight of by those who project lines of communication between large towns,) ought, I think, always to be kept in view by the Legislature; because I submit, that when the Legislature are asked to perform the severest duty which they ever can, with reference to private individuals; that is to say, to take private property from its unwilling owners, by a forced purchase, it does become the Legislature to be most careful, that the line which they choose shall not merely give to the intermediate points of the landowners, from whom the land is taken, the usual compensation in money, but shall, if possible, give them a fair share of those general advantages which are to be expected from inter-communication.

“With reference to this public object, and with reference to this object alone, I shall be obliged to call the attention of the Committee, for a very short time, to certain trans-

actions which have taken place in reference to this line of Mr. Cundy, because, without that information, it will be impossible for me to shew that which I pledge myself to the Committee will be done, namely, that Mr. Cundy's original line, as first laid down by himself, is the best line now before the Committee.

“ My Lord, the proceedings *of* the Committee have relieved me, or rather, I should say, the proceedings *in* the Committee have relieved me, from the necessity of considering more than three lines ; the one, of Sir John Rennie ; the second, that which Mr. Stephenson calls his own ; the third, that of Mr. Cundy. With regard to the other gentlemen who appeared before you as candidates for forming a Railway from London to Brighton, they have been disposed of. As a matter of curiosity, one should like to know, perhaps, the number, the weight, and the intrinsic value of the arguments which have been preferred, and had such magical effect in utterly dumfounding the recipients, who had not one word of reply to offer to them. Cogent, therefore, they must have been ; successfully they eminently have been to a great extent. However, I ought not to complain of that, because the effect of it has been very much to diminish the weight of my task ; and I am now only to consider Sir J. Rennie's, Mr. Stephenson's, and Mr. Cundy's plans, in comparison with each other.

“ With regard to Sir John Rennie's plan, it was to be expected, from the high reputation which the Rennie family have so long attained—from the vast supplies of public money with which they have always had the advantage of prosecuting their designs, that some bold, straightforward plan should be presented to the Committee. Sir John Rennie has given the shortest plan of those which have been presented to you. No doubt, as a question of engineering, Sir John Rennie's is a bold undertaking. I only wish that the shortest plan were in other respects the most practicable ; because, as one of the public intending to avail myself of any of these plans when they shall be put into execution, I only wish that the best should be adopted ; but, unfortun-

nately, nature is too strong and powerful to be dealt with in this way, and this shortness of line seems to have been bought, as far as I understand, at too great an expence—the danger and inconvenience resulting from the employment of tunnels, and other circumstances, especially the steepness of the gradients, on the whole, make it ineligible as compared with either of the other two plans now before you.

“ My Lord, I shall not detain you on that matter. The whole evidence is before you—the whole evidence as between the line of country in which Mr. Cundy and Mr. Stephenson run their lines, and the line of country in which Sir John Rennie runs his line. I think I may safely rest the comparison upon the district itself. I think, from what I have seen of the evidence, that the Committee will have no difficulty in determining, that no line of Railway, except in the district in the line of country which has been adopted by Mr. Stephenson and Mr. Cundy, can have any hope of success; that that is the true one pointed out by nature; and no talent, no cost, no engineering science,—nothing can compensate the engineer for the original error of attempting to make a Railway in any line other than that indicated by the finger of nature herself.

“ My Lord, with regard to Sir John Rennie’s line, it is encumbered with tunnels to a very great extent, and those tunnels are of very great length. I know not in detail the evidence which has been given to the Committee upon that subject; but this I do know, that every engineer, until he is himself hampered with tunnels, begins by condemning them, begins by considering them a very great disadvantage: it is only when he finds that tunnels are absolutely necessary to his own plan, that they are inevitably fixed upon him, then, and not till then, he begins to clip away those disadvantages, to explain them here and to mitigate them there, and while, in fact, in the wholesale and in the general he is still obliged to admit that tunnels are disadvantages, yet he tries his best to make them appear as small as possible to the eye of the Committee.

“ My Lord, I have already said that Mr. Stephenson and

Mr. Cundy are proceeding along the same tract of country, therefore I am very much relieved in the task which is before me ; because the comparison of two Railways, being both upon the same line of country, must be drawn within a very narrow circumference. I have not to argue that Mr. Cundy's line goes through the best tract of country ; that stands upon the admission, nay, upon more than the admission, upon the strong assertion, of Mr. Stephenson himself. It is Mr. Stephenson's case, that Mr. Cundy's line of country is the best ; it is Mr. Stephenson's case, that Mr. Cundy—the dreamer, the man of vain imagination, the half enthusiast, the half impostor, which he has been represented to this Committee—that this same Mr. Cundy, by accident, by good luck, or by some other circumstance, has at least hit upon the best line of country in which a Railway can be carried from Brighton to London. There we are on common ground as regards the line of country ; and therefore, as I before said, the comparison may be drawn into a smaller space. But, my Lord, it is necessary to inquire how it was that Mr. Stephenson found himself in *that* line of country—how it was that Mr. Stephenson (to use his own expression), has run his line of Railway very nearly parallel to Mr. Cundy's line from London to Brighton ? Was this a discovery of Mr. Stephenson's own ? Certainly not ; Mr. Stephenson admits that he obtained it from Mr. Cundy. How came that to be so ? Was the superiority of the line so obvious, that no persons, looking at the maps and plans, and making an observation upon the country, could at all mistake that Mr. Cundy's line was the proper line to take from Brighton to London ? Certainly not ; because it is very clear, that nobody else chose it before him, though many were in the field. Doubtless, every thing is obvious when it is pointed out ; and I do not know that you could make an eulogium of any invention in higher terms, and in fewer words, than by saying, that the moment it was pointed out, every body was so satisfied of its excellence, and felt it to be so perfect and simple, that they reflected on themselves with surprise, if not anger, that they had not themselves made

the discovery. But, if it had been obvious in that sense of the word which Mr. Stephenson now wishes to be put on it, how was it that, although to make a Railway from Brighton to London has been the great object with all engineers for the last three or four years—(the prize which they had in view, which, if they accomplished it to the satisfaction of the Committee, was to give them reputation for life, and practice as long as they chose to continue in the profession)—how was it, that none of these men of talent—that Mr. Palmer, that Mr. Vignolles, Mr. Gibbs, Sir John Rennie—none of them took this line of country which Mr. Cundy has laid down; and how was it that Mr. Stephenson himself only, as he admits, found this line of country from its having been laid down by Mr. Cundy? My Lord, it is easy for Mr. Stephenson now to come forward and say, that, finding out that line of country (which nobody else had hit upon) is a trifle. I say, to judge after the fact, and to judge before, are two very different things. I shew, that in an engineering point of view it is not a trifle, because I shew you that four eminent engineers had gone over the same country for the same object, namely, that of discovering the best line for a Railway from Brighton to London, and that none of them had hit upon Mr. Cundy's line at all.

“My Lord, this leads me to the consideration of the question, how it is that Mr. Stephenson has found himself here? My Lord, towards the end of the year 1834, about the month of November or December, several gentlemen, of the highest respectability, of the greatest wealth, and, therefore, of very great influence, associated themselves together for a most praiseworthy object,—not to take the plan of any particular engineer under their patronage, and to work upon that plan, but to invite all engineers who had been making surveys with reference to a work of this kind, to lay the produce of their labours before them, with a view, no doubt—for I am sure that it would be an insult to them to suppose any thing else)—with a view, not to appropriate to themselves unfairly the advantages of the labours of others, but to make a just selection; and to him whom they found to have discovered

the best line of country for the Railway, to intrust (as they ought to do) the execution of the work as the reward of his ingenuity; or, if there should appear to be any overpowering reasons to prevent them from intrusting the work to such a person, not to appropriate to themselves any part of his plan—any effect of his talent—any thing that belonged to him; not merely to deviate from his line of Railway, but to abstain from taking that line of country which was the most important part of the general plan.

“My Lord, I think that this association met for a laudable purpose; they represent very fairly the public interest, which was, not that any particular engineer should be appointed—not to favour Sir John Rennie, Mr. Stephenson, or any body else—but to support, with money and influence, that man who had found the best line upon which to execute this great national work. Accordingly, these gentlemen obtained the assistance of solicitors of equal eminence with themselves, and of equal reputation and influence in the world; they sent round circular letters, one of which, addressed to Mr. Cundy, was received by him, of which I will read a copy.

“‘SIR,

“‘WE send you a copy of some resolutions entered into at a meeting, held yesterday, of gentlemen desirous of promoting a Railway from London to Brighton, and we are desired by the Committee then appointed, to ask, if you are willing to submit your plan and sections to them, and if you are, to request you will be good enough to send them to us on or before Tuesday next.

“‘VIZARD AND LEMAN.’

“This letter was received on the 13th of December, 1834. It so happened that the resolutions were not sent with this letter, but they were sent a few days afterwards. In the interim Mr. Cundy sent his reply, to which I beg the particular attention of the Committee. It is as follows:

“‘SIRS,

17th December, 1834.

“‘MY plan is now public, and I have no objection to send it for the inspection of the Committee you mention; and I am perfectly willing to submit the same to the examination of nine gentlemen,

three to be chosen by each projector, who shall be at liberty to call in the aid of three engineers, to advise them thereon.

“ ‘ I am, &c.

“ ‘ N. W. CUNDY.

“ ‘ P.S. In consequence of *the shortness of your notice*, I have not had time to complete the plans as I could have wished.’

“ Sir John Rennie and Mr. Cundy afterwards submitted to the direction of the associated body as to the umpirage, and it was by them determined (by the Resolutions which I shall presently read) that the several plans should be put under the umpirage of Mr. Stephenson; and Mr. Stephenson was appointed to report to the association which, in his judgment, was the best line on which to put a Railway from London to Brighton. My Lord, that was the object, as I before stated, which these associated gentlemen professed to have, and which I doubt not they had, in view. I find in their own Resolutions this one, which proves it completely: ‘ That a sub-committee be appointed to examine and consider the several plans deposited with the clerks of the peace, preparatory to an application to Parliament for an Act to authorise the making a Railway from London to Brighton, and that such committee be also at liberty to inquire if there be any other line less liable to objection than those chalked out by the plans deposited; with a view to which several examinations and inquiries, the sub-committee are to be at liberty to call in the assistance of Mr. Stephenson, the civil engineer, and any other engineer, if they shall see expedient so to do.’

“ And on the 22d December, the Committee came to the following resolution: ‘ It was resolved, that Messrs. Rennie, Cundy, and Vignolles, be respectfully informed, that the sub-committee are willing to go into the consideration of their plans for Railways from London to Brighton, with a view of referring them, upon all professional points, to Mr. Robert Stephenson, upon the distinct understanding and agreement, that they do not submit either themselves, or any

other persons, to any claim for any services, past, present, or future, or for any expenses already or hereafter to be incurred with reference to the said plans, or in any other way whatever.' Now, my Lord, these resolutions appear to me to be of immense importance in explaining the object and intention of the parties. It shews that these gentlemen, who had sent round to ask engineers for their plans, did not intend to pay those engineers after the manner in which the architects of the plans for the two Houses of Parliament have been paid; that is to say, by paying to the first, second, and third, a certain premium or reward for their plans; that is especially guarded against. Upon what ground, then, did they ask these gentlemen to send their plans? Upon no expectation of any species of remuneration? They will not say so: it would, indeed, be an extravagant piece of insolence for gentlemen to associate themselves together, and send round to ask engineers to send in plans, with no hope that their labours, made at so much expense of time and talent, would be useful to any but that same associated band of capitalists. What does it therefore mean? It means this: we will not pay the successful candidate by any premium for his plans—we will not pay him for his plans, estimates, and surveys, as if they had been originally undertaken upon a regular retainer from us; he shall be rewarded in the way in which engineers usually are rewarded who make plans of lines, which lines are found to be the best—we will adopt his line, and adopting his line, we must of necessity adopt him himself. Now, my Lord, this being done, the plans are submitted to Mr. Stephenson; and certainly one should have supposed, that an eminent engineer and surveyor, having accepted the situation of umpire, would have felt himself precluded from coming into the field as the rival of a man who, in the plenitude of confidence, had submitted plans to his inspection in the character of an umpire or a judge. I say, that in every profession, the members of which deserve the name of gentlemen, that is a feeling which would be prevalent—would be universal. In the profession to which I have the honour to belong, if any thing comparable to this took place,

the man who did it would lose caste for ever. Mr. Stephenson rendered it incompetent to him ever to become a rival of these gentlemen by having accepted the office, and placed himself above them, as an umpire.

“ Now, let us see how Mr. Stephenson acquitted himself of his umpirage. Mr. Stephenson made a report, of which I will say that, although I cannot pretend to affirm that at the time Mr. Stephenson made this report, he really looked forward to supplant Mr. Cundy, but this I can say, if he had entertained such an opinion, and such an intention, that all his subsequent acts are consonant with that object, and go to advance its fulfilment. The report gets rid of Sir John Rennie very quickly indeed ; it puts him *hors de combat*—he is on the wrong line—he has that which, at that time, Mr. Stephenson thinks very disadvantageous, and his plan is considered scarcely fit to be compared with Mr. Cundy’s; and the associated body are recommended by Mr. Stephenson not to enter into Sir John Rennie’s plan at all. With regard to Mr. Cundy, the report states that his line of country is the only one that can be adopted ; but that there are errors in his plan, and discrepancies between his plans and his sections, which put his plans, and, by inference, put him, entirely out of the question ; he and his plans must walk out of the field together. My Lord, for one moment supposing there were the errors which Mr. Stephenson chooses to insist there are—suppose he is perfectly correct in his fact—do his conclusions follow ? Suppose the plan got up by an engineer with imperfect resources of money to obtain that assistance which money alone will obtain, in making his plans perfect ; suppose that these plans are found, to a certain extent, deficient, ay, so far deficient that another survey is necessary by other surveyors, to go over his elevations and his distances again, and to check them from one end of the line to the other—unless the errors were of a nature to affect the whole character of the line, and to demonstrate it to be impracticable, I ask, my lord, whether the existence of such errors touched the main question at all ? You find by Mr. Cundy’s post-script to his letter, that being desired to send in copies of his

plans in three days, he tells Messrs. Vizard and Leman that he cannot be answerable for the perfect accuracy of them, for they are made out *in haste*. The question, therefore, with any person coming fairly to the examination, is this; not whether there are errors in the plans, but whether when those errors are corrected, the plans and sections of Mr. Cundy shew a line of Railway that is inconvenient or impracticable. I should have thought that was the fair way of reasoning. Not so Mr. Stephenson. Mr. Stephenson goes with a minute and critical accuracy (as it was his duty to do) into the examination, and gives a list of errors which, he says, he found upon Mr. Cundy's plans and sections. Now, my Lord, I have already said, that, supposing he is right here his conclusions do not follow: but, my Lord, he is not right here. I challenge the other side upon that particular point; I direct, at the outset of the case, their attention to that particular circumstance. I say, that the errors described in Mr. Stephenson's Report are in the main the errors of Mr. Stephenson—sincere or insincere—and that the report is most inaccurate and incorrect when it charges the errors upon Mr. Cundy. I will illustrate my observations by referring to one of the supposed errors in Mr. Stephenson's Report, which he considers the principal one, and the one on which he reported, that the plans should be put entirely out of the question, I affirm, that that is not an error of Mr. Cundy of any kind, but a mere mistake of the transcriber of the copies, who wrote in a word in one place when it should have been written in another; and that it does not at all affect the distance and the dimensions of the real line. In my address to you I shall not detain you by going through the supposed errors at any length, to prove to you the inaccuracy of Mr. Stephenson in his charges against Mr. Cundy; for those charges have really no foundation in fact, but the only one upon which there is any thing like plausibility, is the one to which I have just alluded, and which I must take the liberty of explaining to the Committee, because it is the only one in which there is any inaccuracy in the plans themselves; and that same

minute criticism which was sufficient to detect the inaccuracy would have been quite sufficient (if the mind of the man which noted the inaccuracy had been fair and honest) to have produced its correction at one and the same moment. My Lord, upon the line there are two points, one of which is called the 'Court House,' and the other the 'Stone Bridge;' those two points are upon the line, and they are at a certain distance, a distance of seven and a-half miles, from each other: there is an intermediate point, 'Newdigate' Church—Newdigate written upon the plan in the wrong place, whether before or after the plan was sent to Mr. Stephenson I do not know; there is a correction upon the plan, but it would be most charitable to believe that it had been made after Mr. Stephenson looked at it, but of that I cannot be sure; I am now taking it as if there were an error in the writing on the plan at the time Mr. Stephenson saw it. Now, my Lord, what is that error? (Mr. Hill here shewed the Committee the Plan). Why, that the word 'Newdigate' is written *here* whereas it ought to be written *there*. Mr. Stephenson says, Oh! here is a plan that cannot be relied upon; 'Newdigate' is a mile and three quarters nearer to the 'Court House' than it ought to be, it ought to be removed from that mile and three quarters and put into the place where my finger now indicates it; but he found also upon the plan, that while Newdigate was a mile and three quarters nearer to Court House than it ought to be, it was also precisely the same distance further from Stone Bridge than it ought to be; and, therefore, the two errors rectified themselves, and did not spread along the line and make every other point of the map wrong, which would have been the case had it been an error of substance instead of what it really was, a mere clerical mistake.

"Now, if the Committee will give me their attention one moment to understand this, it will shew at once the *mala fides* which characterised Mr. Stephenson's examination of Mr. Cundy's plan; honourable members will see that, in order to make the *plan really* inaccurate, this error should have generated another error, and so on to the end of the

line; but the plan remains perfect, because it is not pretended that these two points, 'Court House' and 'Stone Bridge,' are at any but correct distances; and Mr. Stephenson has himself in his own tables told you, that Newdigate, though it is one mile and a half too near the Court House, is also one mile and a half too far from Stone Bridge. Now, with that one exception, so easily explained by a man of a tithe of the knowledge or practical experience of Mr. Stephenson, with that one exception in this list of errors given to the Associated Body, as the errors of Mr. Cundy, all these so called errors are every one of them errors of Mr. Stephenson, as far as regards the comparison of the plan and the Ordinance Map. With regard to the original section, there may be here and there some minute errors, I cannot prove it one way or the other, because the person who assisted in taking the levels and preparing the original section, is unfortunately dead and I cannot bring him before you: his name was Julian."

Mr. Wood.—"Mr. Julian is alive and in the employment of Mr. Stephenson at this moment; therefore, if my friend wishes it we will produce him."

Mr. Hill.—"If this is a mistake I am very much obliged to my friend for correcting me; but it may be, for aught I know, one of the same class of mistakes which Mr. Stephenson has made in his report and charged upon Mr. Cundy. I may be wrong in the name, but if Mr. Julian is in Mr. Stephenson's employment, let him be brought: I may be wrong in the name; it is the name which is given to me; the man who made this section I am informed is no more. If he is alive let him be brought forward and the truth come out, we are perfectly ready to meet it: my friend has pledged himself to produce him and I call upon him to produce him."

Mr. Wood.—"We will tell you where he is."

Mr. Hill.—"You say he is in Mr. Stephenson's employment, then he is at your command; you may bring him here."

Mr. Wood.—"He shall be in the room if my friend wishes it."

Mr. Hill.—"The man I mean is the man of course who took the section. I do not want the father if the son took the section; I do not want the son if the father took the section: there were two of them, and that may have led to the mistake. I perceive there is a readiness to interrupt and take any thing by way of contradiction, and to seize on it with avidity; therefore, my Lord, I must put myself right when my statements are attempted to be contradicted before the Committee. Mr. Cundy, my Lord, naturally expected some notice of what these gentlemen, who had taken the liberty of sending for his plan and putting him to considerable trouble and expense, intended to do. Mr. Cundy, however, heard nothing; but, having made inquiry for the Report of Mr. Stephenson to know what had been his determination on this question, he was merely permitted by Messrs. Vizard and Leman to learn the meagre and unsatisfactory information contained in the following note from them.

" 'SIR,

6th February, 1835.

" 'We are not authorised by the Committee to give you Mr. Stephenson's Report, but we can inform you generally that he is inclined to think your line of country the best; but that your plan and section are so incorrect, and the one so at variance with the other, that they cannot be acted upon or any just conclusion drawn from them.'

" Nothing is heard after that till Mr. Cundy finds out that the matter is entirely taken out of his hands, and Mr. Stephenson is brought into the field.

" I have not, my Lord, mentioned these facts for the purpose of drawing the Committee into any private disputes between Mr. Cundy and Mr. Stephenson, or between Mr. Cundy and those gentlemen who support Mr. Stephenson. I have not done it for any such purpose, but I do it to shew to your Lordship and the Committee, which I shall do, what influence these circumstances have had upon the selection of the exact line which has been chosen by Mr. Stephenson.

" My Lord, I had got thus far in my case as to mention to

you, on the authority of Mr. Stephenson himself, as stated by him in evidence before this Committee, that the two lines of Mr. Cundy and Mr. Stephenson run nearly parallel the whole way to Brighton. Why are they not exactly parallel? Why are they not *identical*? I think I have put the Committee in possession of reasons which must very strongly have operated upon the mind of Mr. Stephenson to prevent them from being identical. It was a strong measure enough to take Mr. Cundy's line of country, one requiring to support it all the weight and all the respectability by which Mr. Stephenson is supported; one which, if it had been ventured upon by inferior men, I will venture to say would never have been endured by the public. Suppose, instead of gentlemen eminent for their wealth and their influence, supported by solicitors of equal eminence, you had half a dozen shopkeepers supported by a pettyfogging attorney; and suppose the case against them was this, that they had sent for a gentleman's plans, adopted his line of country, invented errors in his plan which did not exist, and then turned him adrift and employed others! No man could have ventured to come to Parliament with such a case. No man could have endeavoured to support it before a Committee of the House of Commons. There are limits to every degree of boldness: and, having taken the line of country, these gentlemen do not choose to take the exact line of the Railway itself. Why? My Lord, it is very clear that if they had done so the thing would have been too monstrous to be borne. What! take a man's line of country and take his Railway too! That will not be endured. It is necessary, therefore, to make some deviation from his line. The question is, and to that I now invite the attention of the Committee, are those deviations really for the better—entered into with the sincere desire of improving the line; or are they deviations for the mere purpose of making the line different to that which Mr. Cundy had made? My Lord, I venture to say that in every one of the three instances in which it is found that there are material deviations from Mr. Cundy's line by Mr. Stephenson, that those are deviations in every

case for the worse, and not for the better. The main deviation, as it would appear on the face of the map, is one from West Grinstead to Newdigate. In that part of the country nature had provided the means of making a great apparent deviation without obtaining any real advantage; the character of the country is in both lines the same, and it is immaterial whether you go to the right or to the left. Mr. Cundy takes the easterly one; Mr. Stephenson takes the westerly one: there are reasons which induced Mr. Cundy to take the east side, which are valid reasons, namely, that it is a mile shorter than the other. Mr. Stephenson goes out of his way one mile for no advantage at all, except that of colourably deviating from Mr. Cundy's line. But there is a more completely colourable variation than even that; the one to which I am now referring is one at what has been called the Micklemham Valley: I mean in the part of the line where it passes the Surry Hills. In that place you will actually find that Mr. Stephenson varies from Mr. Cundy's line as it would appear for the mere purpose of going *through a tunnel*; for there is no real advantage—no benefit whatever is derived from the circuitous deviation, except it be from the fact of making a distinct and decided variation in that place between his line and Mr. Cundy's line. My Lord, why should a person for any other than a colourable purpose encumber himself unnecessarily with a tunnel? Mr. Stephenson tells you in his report that tunnels are of very great disadvantage, and so they are: he tells you in his evidence, most particularly, that they are highly objectionable; and yet you find him in this plan going from the line as laid down by Mr. Cundy, gaining no advantage whatever from the deviation, and importing into his plan two of these very objectionable and unnecessary tunnels. I ought to have told the Committee before this time, that in Mr. Cundy's plan there is no tunnel at all from the beginning to the end of it; whereas in Mr. Stephenson's plan there are several. Before Mr. Stephenson began, he said, as all other engineers do, that tunnels were bad things. In the course of his evidence I find him saying, that tunnels 'are very objectionable when

they are more than half a mile long.' Coming to that passage, I did not think it necessary to puzzle myself in making inquiries as to what it was that determined half a mile to be the safe measure of a tunnel; how it was that in passing through that space you could be dipt into midnight darkness and then flash into meridian daylight without suffering inconvenience; how it was that the air which is evolved from the mouth of the steam-engine chimney in passing through tunnels more than half a mile long is detrimental to the health and destructive of the comfort of the passengers, and, when less than that length, becomes grateful to the senses and beneficial to their health;—I did not think it at all necessary to make those inquiries, because I felt, my Lord, that if I looked a little further into the evidence on the one side or the other, it would furnish me with a very different solution of Mr. Stephenson's measure of the length and shortness of tunnels, namely, that *his own tunnel* must be not half a mile; and so I found it. I found by Mr. Stephenson's own evidence, that his tunnels were 'about half a mile in length—about 800 yards,' which, as your lordship knows, is rather less than half a mile; and hence I had no difficulty in my own mind in ascertaining why it was that Mr. Stephenson found tunnels of less than half a mile were harmless and inoffensive, while tunnels *above* half a mile were 'very objectionable.' The question was asked him, 'Considering the shortness of those tunnels, do you apprehend any material inconvenience from them in the use of the railroad?' To which he replied, 'No, in consequence of their shortness, I do not.' Now, I think it is only in the very next passage before that, being asked the length of his tunnel,—'Will you have the goodness to tell me what is the length of the tunnel at Epsom Common?' Mr. Stephenson replied, 'Somewhere about 800 yards;' 880 yards being, as the Committee knows, half a mile, and Mr. Stephenson's own tunnel being thus 80 yards within *his regulation length*. I cannot imagine, I confess, what it was that induced Mr. Stephenson to fix upon a tunnel either at Dorking or at Epsom, unless it were to evade Mr. Cundy's line; because,

even in his own evidence, hampered as his plan was with tunnels, he does not pretend to get rid of the inconvenience altogether, but only says that it is diminished when the tunnel measures less than half a mile. This subject will be more fully explained to you by the engineers; they shall be submitted to the rigid cross-examination of my learned friends, and we shall see whether they will be able to find out any valid and sufficient reason for Mr. Stephenson going from Mr. Cundy's line in the Mickleham Valley, and encountering the difficulties of the tunnels in the manner he has done.

“ My Lord, the mode in which Mr. Cundy's exertions and his plan were spoken of in this Committee by Mr. Stephenson and his counsel, at the commencement of its sittings, was not so injurious to Mr. Cundy as it was perhaps intended to be. The effect of those calumnious aspersions was to rally round him a certain number of persons of wealth, influence, and respectability, who determined that, since it was admitted on all hands, even by Mr. Stephenson himself, that Mr. Cundy's line of country was the best, it should be made matter of careful examination whether he who had the merit of discovering the *best track* had not also the inferior merit of pointing out the correct *line of road* to be drawn through that track; and therefore it was that, long after this Committee had begun its labours—long after these unjust aspersions had been cast on Mr. Cundy's plans and calculations, the Company was formed which now support that gentleman: and an engineer of great eminence, Mr. James Mills, was called in to test the accuracy of Mr. Cundy's plans and statements, and to ascertain if (as Mr. Stephenson had said) those plans were mere schemes in the air—mere imaginary objects; or whether they were truths and realities which that gentleman had undertaken to bring before Parliament and the Committee. My Lord, the consequence was, that Mr. James Mills, a man of undoubted eminence and talent, went over the line: he tested, by himself and his assistants, the surveys and levels which had been made. I shall bring him before you as a witness, and I feel no doubt he will satisfy this

Committee that the aspersions upon Mr. Cundy's line are altogether without foundation. Mr. Mills, my Lord, is a person than whom no other could have been chosen more likely to be suspicious upon these matters; for he is the gentleman who has been long employed by government to go down and make surveys when applications are made, as they too frequently are when works are advanced to a certain progress, for the aid of Government, upon the ground that the estimates of the engineer have been found altogether inadequate to bring the works to a proper conclusion. That was the case with Mr. Stephenson in his line between Manchester and Liverpool, upon which he justly prides himself; but there it was found that his estimates were as much as 300,000*l.* under what was required to perfect the work: Mr. Mills was sent down; Mr. Mills goes over the estimates, and he finds where the mistake is."

Mr. Wood.—“The estimates were never made by Mr. Stephenson; your statement is entirely incorrect.”

Mr. Hill.—“I am told that the estimate was Mr. Stephenson's: the fact undoubtedly is, that Mr. Mills on that occasion (as on many others) went down to correct those errors which had been made, and my object in mentioning it to the Committee is this—to shew that Mr. Mills, from the nature of his practice, is a man much more likely to put estimates too high, much more likely to be severe and stern in his examination of the works and calculations of other engineers, than to be influenced by the opposite feeling; for it is his duty to the government so to conduct himself with respect to the engineers whose works he goes down to survey. My Lord, Mr. Mills, with all his experience, a gentleman thus been long entrusted by the government, will be placed before you. Mr. Stephenson in his evidence was pleased, apparently with great scorn, to dispose of Mr. Gibbs and Mr. Cundy together, by saying that ‘Mr. Gibb's line had no existence in nature, that it is as fanciful as Mr. Cundy's section.’ I will submit Mr. Mills to the cross-examination of my learned friends: he will tell you that all the principal levels on Mr. Cundy's section ‘have been found in nature;’

that it is *not* ‘an imaginary section;’ and that it is a section which admits of gradients quite as favourable, and in fact superior, to the gradients of Mr. Stephenson’s own line. Mr. Stephenson has said, to shew how fanciful and imaginary was Mr. Cundy’s line, and, in fact, how fraudulent were his representations respecting the gradients on his section, that ‘he had taken them from the London and Birmingham Railway, and had altered the face of the country in his plans and sections, for the purpose of making them fit the London and Brighton Railway.’ Now, it does happen, and it does appear in a further part of that same evidence, that Mr. Stephenson himself, going over the same line of country, had found levels capable of receiving gradients very like those of the London and Birmingham Railway; and yet Mr. Stephenson does not accuse himself of ‘making the country to fit the gradients,’ which would have been quite as reasonable and probable as accusing Mr. Cundy of doing so. My Lord, the mode in which engineers proceed is well understood; the line of country through which the projected Railroad is to pass being settled, they send surveyors, who take the levels, and give the elevation and depression of every yard of country, or every ten yards of country, throughout the whole line; that being put on paper, the engineer distributes it into gradients, according to his skill, and according to his experience, throwing the slopes here and throwing them there, according as he, to the best of his judgment, believes to be best for the whole line. That is an affair which may be done, on the very same plans, by various engineers, and in various ways, each not falsifying the plans—each keeping to truth, but each having a different opinion as to the best mode of arranging these slopes over the whole line.

“My Lord, I shall shew you that the plan which Mr. Cundy proposes to execute, is this: he proposes to divide his line into two gradients. He proposes to go to a spot between London and Brighton, namely, up to the summit at the county boundary near Rusper, ascending all the way, with no descending slope at all. Then, when he has arrived at the

spot, he will descend all the way to Brighton, except a very slight ascent towards the Brighton terminus, which is considered by engineers an advantage, because it breaks the speed previous to the engine stopping finally. Mr. Stephenson himself, in his Report, says, that one of the disadvantages of Sir John Rennie's line of Railway is this, that it has a very fluctuating set of gradients; that the engines will have sometimes to go up and sometimes to go down, and the effect of that is very much to increase the wear and tear of the engine, and liability to accidents. Engineers, therefore, consider it to be a very great point gained, when they can so arrange their gradients on the line, that they can at the outset (setting out either from London or from Brighton) urge the fires of their steam-engine up to such a height as will be sufficient to carry the train at the required velocity up to the summit; then the fires can be slackened, and the engine play, as they call it, all the way down, to Brighton on the one side, or to London on the other. That is an advantage which we propose to give our Railway. Another advantage our Railway possesses over Mr. Stephenson's is, that it will be shorter. Now, shortness may be bought too dear, as the Committee has, perhaps, seen in the case of Sir John Rennie's Railway; but it is in itself an excellence, if there are no countervailing disadvantages—if all other things are equal, then the shortest Railway is clearly the best. We shall shew you here that other things are not only equal, but that the balance of advantages is greatly in our favour, and that Mr. Stephenson, in taking a longer line than ourselves, has taken one in many respects inferior, upon other grounds than that of shortness. Among others which may be mentioned, are the tunnels. We have made it a prime condition of this line of Railway, that it should go from London to Brighton without a single tunnel. Now, if that can be accomplished, and we still have a shorter Railway, and there is no countervailing disadvantage, I apprehend the Committee will be of opinion that those are two most important advantages, and that they will pause and reflect before they decide against a Railway which possesses them.

“ This, my Lord, is the plan, in its outline, which I lay before the Committee, and I shall not detain them by any observations going more into detail. I began by claiming the indulgence of your Lordship and the Committee, on account of the very short time which you allowed me to prepare myself to bring this plan under your consideration. I think all matters which require more detail are much better given to you in the evidence by the scientific witnesses who will be called before you. Any engineering statements of mine would receive, as they would deserve, but little weight in this Committee; but I must be indulged for one moment, while I attempt shortly to recapitulate the advantages which this Railway possesses. I speak not now of the advantages of Cundy’s line in reference to traffic or any other circumstances of that description, but confine myself to the advantages of the line in an engineering point of view, in conformity with the decision of the Committee, and all other matters will follow in their proper place. My Lord, the advantages are these: we go through the *best district* of country (that is conceded to us, at least, by one of our opponents); we go in the *best line* through that district of country. The presumption that we have taken the best line, is in our favour, at all events, because the world was all before us where to choose. We might have gone on Mr. Stephenson’s side of the valley, if we had so pleased; we might have had a tunnel at Mickleham, if we had been in love with tunnels, as Mr. Stephenson seems to be; there was nothing to prevent us from adopting every one of those deviations which Mr. Stephenson has himself adopted: we were restrained by no consideration but the sincere conviction (derived from an intimate knowledge of the country) that those deviations would not be advantageous, but would be seriously detrimental to the plan. On the other hand, Mr. Stephenson is under the necessity, as he himself states, of going through this district, which is marked out by the hand of nature so clearly as the best line, that the attention, *being once directed to it*, it is almost impossible even to look on the Ordnance plan and not perceive, from the map itself, that it is the best

way from Brighton to London—that it affords incomparably the best opening through the Surrey hills. You approach the Surrey hills by the valley of the river Mole, and thence pass over the county boundary, and fall very quickly into the track of the river Arun, and follow that track which all engineers would follow, for the obvious reason that it pursues its course through the flattest part of the country, and the line observes that course till the outfall of the Arun at Shoreham; the line then passes from Shoreham to Brighton by the side of the Southdown hills, and thus you complete the transit between the terminus at London and the terminus at Brighton. Now, I say, it was absolutely necessary that Mr. Stephenson should not go in the precise track laid down by Mr. Cundy; he, the confidential umpire, the impartial judge, the independent arbitrator, between Cundy's, Vignolles', and Rennie's line, could not do that—he could not come to Parliament with *identically* the same line, pilfered from one of the parties who confided in his umpirage; the thing would have been too ludicrous, or (if considered seriously) too dishonest, to bear investigation for a single moment: he, therefore, has introduced certain deviations. Now, then, let me entreat of the Committee—(as I feel convinced they mean to perform the high duty which is cast upon them by the House of Commons with perfect fairness and impartiality)—let me entreat them to keep a vigilant eye upon those deviations. If it shall be found that those deviations are made for a sufficient reason, why, then, one part of my argument falls to the ground; but if it shall be found, as I am instructed is the case, that those deviations are not founded on good reason, but flow from the necessity of departing sometimes, and on some occasions, from the track of Mr. Cundy, I am sure that fact will have great weight in the minds of the Committee. If it is not so proved, still I am sure that I shall be excused for any warmth which I may have put into my manner, when the Committee reflect that I am representing a person whom I conscientiously believe to be a most deeply injured man. Even if there are slight improvements upon Mr. Cundy's track, I say, in common

fairness, he having pointed out the track of country—he having pointed out nine-tenths of the very best line (as is proved by Mr. Stephenson adopting it himself), Mr. Cundy was entitled to a very different species of treatment from that which he has received at the hands of gentlemen from whom I should have expected better things, but who had been misled by having certain supposed errors imputed to Mr. Cundy, which, when they came to be investigated, proved to be nothing at all, or which turned out to be errors, not of Mr. Cundy, but errors of Mr. Stephenson. Mr. Stephenson was not satisfied with asserting, in his Report, that these errors existed, but in his evidence he has exaggerated them even beyond his Report; what in his Report he calls an error of two miles, in his evidence he calls an error of three miles, namely, that which I have attempted to explain to the Committee of the mistaken writing in of the word “New-digate” in the wrong part of the map.

“My Lord, one would have thought, that, even if Mr. Stephenson had been himself deceived about these errors at the time he drew his Report, that after he himself had had the survey made—after he had the means of a more complete examination into the value of Mr. Cundy’s labour, that he would have been the first to retract such a charge against an eminent professional man, which if true, would have the effect of preventing him from ever being employed in any great work in the course of his profession. Nothing, however, of that sort is done; on the contrary, that which in the Report is (without foundation) called an error of two miles, is in his evidence magnified into an error of three miles. My Lord, with these observations I close my address to you. I am very well convinced that I must have been able to give very little assistance to this Committee, because I have not been able to go over the matter with that degree of accuracy which I would have done, if more time had been allowed to me for preparation. I have pointed out to them the great features of comparison, and I apprehend that the matter will turn upon whether those great features are accurate or inaccurate; and the Committee will treat, as matters of very

minor consideration, little matters of detail, either on the one side or on the other. As to Mr. Stephenson's own plans, sections, and estimates, I shall have to shew, that he has been more vigilant in looking after the errors of others, than in correcting his own; I shall have to shew (if my instructions are correct, which I believe they are), that he has largely indulged in a failing not unfrequent among engineers, — that of greatly undervaluing the cost and the difficulty of his own undertaking."

The plain and honest straight-forwardness of this address, so entirely free from the colouring of the advocate, so briefly concentrated to avoid the unnecessary consumption of time, so respectfully consulting the feelings of the Committee, individually and collectively, and so pithily pointing the only public question, namely, the adoption of the best line of road, needs no comment from us. All we shall remark upon it is, that if right be stronger than might; if merit can beat influence; and if every private interest is made to yield to general utility, this speech cannot have been spoken in vain. The prior claim of Mr. Cundy is, as it ought to be, boldly set forth; and the superiority of his design, even independently of that title to the support of English fairness and justice of which it is surreptitiously attempted to defraud him, is clearly demonstrated by reference to evidence which (as the following extracts prove) fully sustains the statement of the pleader.

From the voluminous mass of testimony it is our duty to select a few prominent illustrations; and first, of Mr. James Mills, an eminent engineer of thirty-eight years great practical experience, and the professional associate of Telford, than

whom no higher authority could be adduced in favour of any engineering proposition.

Mr. Mills answers sundry questions to him as follows :

“ I believe I have surveyed all the principal railways of this country.

“ As soon as the Committee applied to me, I required them to place in my hands the Parliamentary sections of both lines, as well that proposed by Mr. Cundy, as the improvements suggested by Mr. Stephenson upon that line ; I took these plans and sections in my hand, and I went very accurately over the whole of those lines : whenever there were any points requiring more than ordinary attention, I have surveyed them four or five times.

“ Perhaps it will be a convenient time to you to give the Committee your reasons against a tunnel of any kind upon any part of the railroad ?—My reasons are not restricted to the atmosphere of the tunnel, or to the objections which are generally urged so much ; the darkness certainly I think almost insuperable, and the part of the season when this country is so much subject to fogs. Now, the great fundamental objection I have against the tunnel arises from this, that the tunnel is so reduced in its dimensions, to be only 27 feet wide by 36 feet high, and from that which I anticipate ought to take place, not to confine any road to two lines of rail ; but that every one of them ought, by Parliament, to be compelled to have a trade line of rail. * * I think on this railroad Parliament will not sanction the substitution of a tunnel, confining them for ever to two roads ; for if the third rail is laid down, all the tunnels must be taken down, therefore it is a fundamental objection to me to have it confined to two roads.

“ I will ask you generally, are you perfectly acquainted with the ground for this line, and the nature of the works contemplated ?—I think so.

“ In your opinion as a practical engineer, is there any one of those works which presents any thing like insuperable difficulties ? O dear ! no ; it is a common and ordinary excavation or embankment, with this difference, that it is upon a larger scale (having dispensed with the tunnels) than we are generally in the habit of using. I have had embankments nearly as deep as these in the Clarence ; I should say, that, ordinarily speaking, in canals and all public

works, when we come to an excavation of fifty feet deep, it is thought more economical to tunnel; and, if tunnels were admissible, I should have had no other objection, it being of an extent of three millions: but having made up my mind from serious consideration, that tunnels are of so objectionable a nature that nothing would induce me to recommend them, I have taken the whole of them as open cuttings; if the Committee think a tunnel is better, then the quantity I have given it might be reduced by three millions, in the same way as the other line.

"If, instead of the open excavation, you had adopted tunnels, the quantity of work would have been reduced by three millions?—Yes.

"In your opinion as a practical engineer, from your knowledge of railroads, would it be worth while to make that saving if you can only purchase it by introducing tunnels?—I am decidedly of opinion, that tunnels would destroy the line in every respect, first as to the view I gave the Committee, which I ultimately entertained, that there must be a third trading rail separate from our rails for carrying passengers at speed to make the thing practicable. I think every railroad would find that to be ultimately to their interest; nothing would induce me to make a calculation for a tunnel. If the Committee think I am mistaken, and that a tunnel will be better, I should deduct three millions, and put the two calculations on a parallel.

"Your present opinion is, that there should be no tunnel?—No, not on any consideration; for it would all have to be taken down if you laid down a rail for carrying heavy goods.

"You have stated that as your objection between London and Brighton?—I think on the Brighton more than any other railroad; for I consider it mainly for the transit of the population of London to recreate themselves by the sea-side, and not a road for bringing an exchange of commodities: I look on the characteristic of it to be distinctly that of taking the great population of London once or twice a week to the sea-side, and bring them; and I would not have them immersed in fog and darkness in that tunnel; and, besides, you must take it all down if it is necessary to lay down a rail for trade at slower speed.

"That is an annoyance to passengers and a great inconvenience?—Yes, decidedly.

"Had you observed the district, and turned your attention to

the question, taking the same district, as to which would be the best line of railroad, Mr. Cundy's or Mr. Stephenson's, with reference to the surface of the country, and the engineering difficulties? —That is a question I am not prepared to answer, without a considerable degree of explanation. I find these railroads keep nearly parallel for a great portion of the way, by the young man who has been sent down by Mr. Stephenson to survey it: he has made some momentous variations. The first is at Clay Hill: he has gone to Clay Hill, and, instead of adopting the line I have been speaking of, he has thought proper to vary it about 220 yards to the west; in that variation he has increased the cuttings in Mr. Cundy's section 400,000 yards; if he had, instead of that, chosen to have varied it to the east, he would have decreased that cutting 300,000; therefore, I am bound to say, that no person having the experience of an engineer, would have made that variation. I say further, that the variation so made on Mr. Cundy's line, at this first point at Clay Hill, if you go as the embankment is seen, that they will have as much cutting as Mr. Cundy has, without the tunnel: so much for the first improvement. The second variation is at Leatherhead Church, and, accordingly, in the original design that I have seen, speaking of the gradient, keeps ascending up towards the summit of the country in Mr. Cundy's line; the improvement suggested by the line, under the auspices of Mr. Stephenson, begins there, and descends 30 feet in 2 miles; it then ascends the same 30 feet in two other miles; and upon what principle that variation could have taken place I am at a loss to conjecture, because I find it going down into the valuable property of Mr. Dickins, and going into Norbury Park, where, in my opinion, the excess in the land composition will be 30,000%. more than Mr. Cundy's line, having a declination of 30 feet, and an ascension of 30 feet, for the very purpose, one would suppose, of deviation, for no particular advantage that can attend the alteration of the engines when going up an inclined plane, and to have a descent and ascent interposed; that is the variation called an improvement: there is a small tunnel also at Norbury Park, that is the same; and I can conceive no reason for it, except for saying it is not the same line, for in both instances it is incomparably worse; that is a matter of fact.

“After this deviation, Mr. Stephenson crosses Mr. Cundy's line again, and goes in another direction; what is your opinion of

that?—Of the third variation by Horsham, I am very much disposed to give Mr. Stephenson the credit of having improved the line; I think in the cutting he has 20 feet less, and in the summit he lengthens it by going to the west of Horsham, which is a consideration whether it is or not used; but unquestionably this line is better.

“Is there any other deviation?—The fourth deviation is in the crossing of the river Adur; I don't know that I am called upon to go on upon what I have not seen in evidence; it has been represented to me, that Mr. Stephenson's line crosses the Adur in a better situation than Mr. Cundy's; I paid particular attention to both lines, and I examined the valley with all the attention I could, and, really, I am bound to say, the crossing as proposed by Mr. Stephenson is not an improvement on Mr. Cundy's—it rather lengthens the valley: Mr. Cundy crosses a very flat country in one direction, and Mr. Stephenson's is obtained as it were by the diagonal of this table; it is somewhat longer than Mr. Cundy's, and I can't fancy there is the least improvement in that respect: the line is longer and the valley equally flat.

“From that point to Shoreham and Brighton, Mr. Stephenson has adhered to Mr. Cundy's line?—I believe they then travel for a long way cheek-by-jowl.

“Now, with respect to the gradients upon the two lines, what is your opinion as to that?—The gradients on Mr. Stephenson's line are eighteen in number, I think.

“And of a fluctuating description, I believe?—I can state them to you. I made the gradients on Mr. Stephenson's line nineteen in number. I will just speak generally: the first is level; the second has a rise; then there are three, two ascending one falling, one ascending one falling on this line; the engine is put to nine different operations of labour. The line which I have designed has for its basis one calculation, that the engine should begin at Brighton, do her labour to the summit, and then play to London; then, that it should begin at London, labour to the summit, and then play to Brighton: those are the calculations I have made.

“But as to Mr. Cundy's line?—That has six.

“But if you compare Mr. Cundy's gradients with Mr. Stephenson's,—you stated Mr. Stephenson's are numerous and of a fluctuating description?—Mr. Cundy's ascend to the summit on the one side, and descend to the other.

" This system of gradients is to ascend up to a given point, and then descend afterwards?—Yes, with the exception of checking the engine before he comes to Brighton.

" In your opinion, is that an element of great importance in the construction of a railroad, the having an uniform system of gradients up to one point, and down to another?—I think it essential on a railroad, in the wear and tear of an engine.

" Independently, the differences of Mr. Cundy's gradients being more uniform than Mr. Stephenson's, are they at smaller inclinations?—Yes.

" To any extent?—Mr. Stephenson has an advantage over Mr. Cundy, as his summit is 20 feet lower; he has an advantage as to the labour he has to perform; but what I complain of in his arrangements is, that there is a fluctuation; now the engine is at work, and then at play, and never in a state of repose; whereas, on Mr. Cundy's it works to the summit, and then plays to Brighton, and *vice versa*.

" If you adopted one, have you any doubt on the subject of which you would take?—I would unquestionably prefer the one without the tunnelling."

A searching cross-examination of this witness, during the second, third, and fourth days of sitting, did not, in the slightest degree, shake his evidence in favour of the superiority of Cundy's line; for he thus answers the questions of Stephenson's counsel.

" Do you consider Mr. Cundy's the best line of road from London to Brighton, considering both its line and its gradients?—I cannot answer that question without some little explanation; I should say, that I do consider Mr. Cundy's line, as having no tunnels, the best of the three lines.

" The Committee apply for your judgment, as an engineer of some eminence, to state whether you consider Mr. Cundy's line, with respect to its direction and its gradients, the best line that could be formed from London to Brighton?—I do not; I mean with respect to the gradients in particular.

" I cannot entertain Sir John Rennie's, or Mr. Stephenson's, with the tunnels appended; but I should say, taking the lines from the best consideration I can give, that Mr. Cundy's line from

London to the Punch-bowl, at Dorking, is unquestionably the best, both in point of cheapness; and as to the design, I think the variation that Mr. Stephenson has suggested from the county boundary may be matter of inquiry whether it is not an improvement; but that is the best opinion I can give upon the whole: but deducting that one circumstance, I think Mr. Cundy's unquestionably is the best."

It was cleverly endeavoured to turn Mr. Mills upon details, but he shewed that Mr. Stephenson had either made wilful blunders in his calculations, or had tried to make out a case of incorrectness against his rival by picking up clerical errors, which did not in the least affect the accuracy of the whole.

Upon Mr. Cundy's own evidence we shall not offer a single observation further than to say, that all the ingenuity and talent of the bar arrayed against him, and no special leaning towards him on the part of several members of the Committee, failed to shake his unvarnished tale, or impeach the value of his surveys and plan.

Mr. John Hitchins, an experienced surveyor of thirty years, was on the fifth day examined as to the nature of the ground over which Mr. Cundy's line passed, and he gives the subjoined evidence:

"Is there any ornamental land all the way through to Horsham?—Nothing that I am aware of at all.

"Did you pass by any house that would be inconvenienced on the road?—None at all.

"Can you speak from your recollection of the field plans, and from examining that plan, to the accuracy of that plan from Brighton to Horsham? (*The witness examined the plan*)—This I believe to be a correct copy of the plans which I sent.

"And of course the plans you took were accurate?—Yes, they were; I have the particulars of every piece with me, if it is wanted.

“ Did you survey any other part of the line?—No, no other part.

“ Are you acquainted with any other part of the line near Epsom?—I have been over the whole line as far as Epsom.

“ Will you describe the nature of the land from Horsham to Epsom; take the parishes separately?—Horsham and Ruspur finish Sussex.

“ What is the general nature of the land along that district?—The land along that district is very cold, wet, poor clay.

“ Does it pass any ornamental ground?—None at all.”

With the Surrey portion of the line Mr. Hitchins was not so well acquainted, but he states, with relation to a general view of the land from Horsham to Dorking, as compared with the land on the other line,

“ When I compare and look at the poor country which the one passes through, and the extremely fine, rich, and fertile valley which the other passes through, it only astounds me for what object that can ever have been attempted.

“ That is at Dorking?—The Mickleham Vale.

“ The Mickleham Vale is extremely valuable property, is it not?—Very fine land, indeed.

“ Will you be good enough to define what is the difference of the value of the land in the line passed over by Mr. Stephenson, and that in the line passed over by Mr. Cundy?—I should suppose that they would bear a proportion of about six shillings to forty shillings. On Mr. Cundy's line, it is farming land only. Placing it on an agricultural point of view, I should say, from six shillings to forty shillings. That is six-sevenths more value than the country which Mr. Cundy passes over.

“ Is there any comparison in the number of gentlemen's seats on the different lines?—From what I have seen, it passes close behind Captain Bolton's house, and I should not think that there would be a great injury, if he were properly compensated.”

Mr. Waddington summed up for Mr. Cundy's line; but, though a very able and convincing speech, we do not deem it needful to trouble readers with more than a few of its

points ; for, surely, what is already before them must have determined their minds as to what expediency and justice demand in this case.

“ MY LORD,

I MUST undoubtedly admit, that the promoters of this line came into the field at a late hour—that they came in when the minds of a great part of the Committee must naturally have been, to a certain degree, prepossessed on one side or the other ; for I think it is absolutely impossible, that after hearing the evidence, supported by able engineers and by the able counsel who have supported each of those different lines, the minds of some honourable members should not be, to a certain degree, prejudiced in favour of one or the other, before Mr. Cundy’s line was brought before them. * *

Mr. Stephenson is said to have repudiated Mr. Cundy’s line, because he, as an engineer of great experience and extraordinary talents, as represented by my friend, found such faults and errors, and such gross mistakes, that it was impossible for him to adopt Mr. Cundy’s line—that it was necessary for him to throw it aside altogether, and to take one of his own, and to come forward as the original proposer and inventor of that line. Now, let us see whether that is *bonâ fide* ; because, if Mr. Stephenson was not acting *bonâ fide*, he does not give us his real opinion. If he was merely acting colourably—if he was stating errors which did not exist, and which he knew did not exist, it was not the fact, that those errors made him deviate from Mr. Cundy’s original line ; but he deviated for some other reason ; and, whether that reason was not, that he wanted to make it his own ? is a question which I would put to any honest man. The great charge of error which Mr. Stephenson makes against Mr. Cundy’s line is that, in one instance, there was an error of two miles in a distance of seven, between Court House and Stone Bridge ; and it now appears, on our evidence, that an intermediate place, namely, Newdigate Church, is put at a wrong distance from each of them, but that the distance between the two places is perfectly correct, and

that, instead of there being any error upon the plan at all—instead of there being any slight error which might have misled any body—which could lead even to the slightest conclusion as to there being other errors, as in the fact of Newdigate Church, a perfectly immaterial place, being put in a wrong situation, the distance between the two places between which Newdigate Church lies being perfectly correct. Thus, therefore, is an error which exists only in the imagination, or, I think I ought to say, in the invention, of Mr. Stephenson. If this charge is untrue—if it is only not a fraud on the persons making this report, what are we to say to his judgment? and does not that confirm the evidence I have given, to shew, that in all the deviations he has made he has injured this line instead of improving it?—that his conduct has not been that of a parent to his own offspring, but that it has been like that of the gipsy, who, having purloined the child of another person, covers it with rags and dirt in order that he may pass it as his own, when he starts forward on his mendicant expedition? * * *

I can easily give a reason why he (Mr. Mills) was not brought forward by either of the other parties. I have no doubt they both applied to him, but I know Mr. Mills had one opinion on this subject fatal to both, for he says, and, I think, most justly, that nothing shall induce him, between two such places as London and Brighton, to adopt a line of Railroad infested with tunnels, which, in his opinion, are the greatest nuisances that can be conceived; and it must be in the nature of a public nuisance, for it will prevent any other Company from coming forward on a future occasion, and supplying the place of such Railway by one equally fit for pleasure and for business, and which will give to the immense number of persons who are continually going between London and Brighton, a full opportunity of doing so, and of enjoying the light of the sun and the air that we breathe, instead of being sent down four or five subterraneous dungeons, as proposed by Sir John Rennie and Mr. Stephenson. * * *

Railroads are, perhaps, the greatest improvements which

have ever yet occurred to the human mind, effecting the greatest changes in the face of the country and in the relations of society ; and when the Committee is called on to consider and determine which line shall be adopted for a great national work, which is to last for ever, can it be a very material element in their consideration whether it is to be completed in the year 1840, 1841, or 1842 ? It does appear to me, that to a comprehensive mind, judging fairly upon the subject of the immense importance of such works as this, that this outrageous hurry, this extraordinary passion for beginning at once to do the work, without one moment's time for consideration or reflection, and to travel immediately at the rate of thirty miles an hour, is of absolutely no weight when compared with the immense importance of selecting a line which will be the best of all, and which will be permanently beneficial to all parties. * * *

I was about to remark on some rather curious evidence, given by Mr. Rastrick, who was called by the promoters of Sir John Rennie's line, with respect to the nature and effect of the gases which are likely to be produced in the tunnels, both of Stephenson and Rennie. It has been stated, as the Committee is well aware, that in a tunnel upon the Leicester and Swannington Railroad, where the engines burn coal, the nuisance of the smoke is so intolerable, that its being endured was only to be accounted for by its being a Railroad for goods, and not for passengers ; and it was suggested, that upon this Railroad, which will be principally for passengers, it might be obviated entirely, or almost entirely, by burning coke instead of coal ; and Mr. Rastrick, in answer to some questions which were put to him by the Committee, for this part of the question, was not entered into by the counsel, who did not much like the answer they expected to receive, that the effluvia arising from coke is much more noxious than that arising from coal ; and that as respects the human frame, the burning of coke is a much greater disadvantage and nuisance than the burning of coal. And, my Lord, that is abundantly clear ; for we all know perfectly well, and often read in the paper of our neighbours, the French, when

they are in a despairing state from love, or gaming, or some other misfortune, doing what they call asphixia themselves. That is done from the very gas which escapes from coke in these tunnels. The same gas which is produced by burning charcoal—the most noxious effluvia that can be produced, and the most dangerous to the human frame—produces that state which is called asphixia, and which is derived from two Greek words, signifying cessation of pulsation. It operates on the vital principle, and produces a total suspension of the vital powers, and there is an end of the Frenchman, and his love, and all his other misfortunes. I say that these tunnels will produce a deleterious influence, to a certain extent—which, though utterly inoperative on a young person in full health, and in the full exercise of his vital powers, might have a very serious influence on an aged person, or a person in delicate health, or a nervous person; and of such persons there are a great number, who ought to have the advantage of travelling agreeably and safely on this road.

Then, my Lord, there are many other objections to these tunnels. There is the damp; but with regard to this effluvia, it is not merely that it will be dangerous and noxious while the train passes, but it will accumulate. Dr. Lardner describes it as rushing up against the roof of the tunnel, then descending, and gradually mixing with the atmospheric air; so that, when one train has passed, it will be waiting for the approach of the next; and, therefore, in fact, one of these tunnels will be a sort of receiver where these poisonous and noxious gases will be contending for the mastery with the wholesome atmospheric air. That will be the sort of arena in which these poisons will contend, and through which the passengers from London to Brighton will have to pass. * * *

I have now redeemed my pledge, and concluded the observations which I have thought it my duty to offer to the Committee in support of Mr. Cundy's line. If I have succeeded in shewing it is a shorter line—that it is as economical—that it is superior in point of inclination—that it is

perfectly easy of execution—and, above all, that it is infinitely and incomparably superior in being an open line—in carrying the passengers in such a manner, that they may enjoy the whole way the light of the sun, and have the benefit of breathing the air of heaven; if I have shewn, that by one line the public will have such a transit from London to Brighton as must be considered a transit of pleasure as much as of business—if, in laying these points before the Committee, I have succeeded in convincing them that they cannot pronounce either of the other two lines superior to Mr. Cundy's line, then I have attained the object of my humble exertions. If I fail in that respect, it must be either from some deficiency in myself, or from some other cause which I have no power to control. I say, most distinctly, notwithstanding all the calumnies which have been thrown out against this line—notwithstanding all the objections which have been urged against it, here and elsewhere, that a better case I never was instructed to lay before any tribunal; and if I do not succeed, it must be from some cause not founded upon the evidence, which I have not the power of meeting or grappling with."

Keeping in view that the public conveniency and advantage *alone* ought to decide this competition, we shall now refer to a source which must, at least, be considered, in all that relates to and favours Cundy's line, a most unquestionable authority, for it is that of Mr. Joy, the distinguished counsel, who summed up the case on behalf of Sir John Rennie. It is worthy of remark, too, that Mr. Talbot, Mr. Stephenson's counsel, carefully and prudently abstained from alluding to this line: on the contrary, he, like a cunningly instructed and skilful barrister, thought it more advisable to contend against that of Sir John Rennie, which he belaboured with all his might on every point except tunnelling; because, if he had held by his own client's original and recorded opi-

nions on that branch of the question, he must have committed *felo de se* for Mr. Stephenson, while only attempting to murder his opponent. The other rivalry was more ticklish to deal with; and, accordingly, it was, by particular desire, omitted altogether.

But Mr. Joy was less reserved and more explicit;* and we gather from his honest avowals the subjoined striking facts and arguments in support of the line, the benefit of which we seek to establish. In the course of his address, May 18, Mr. Joy said—

“I am not in the habit of going out of the way to pay compliments to any one; but, if I am not deluded by the able address of my friend, I should say he has completely demolished the rival line, for there is but one which is immediately and directly his rival,—the rival line of Mr. Stephenson. I say he has demolished that line, and placed his own above it in all respects, with the exception (a large one, I admit) of the embankment nine miles long, and with that, I think, my friend dealt as judiciously as the subject would allow him. I think he disposed of it as well as it could be disposed of, and a considerable part of the difficulty he explained away as to the alteration near Brighton, which converts part of the embankment into cutting, and diminishes the quantity of earth-work required, which, upon the evidence as it stands unexplained and without some further process, is a very formidable difficulty in his way. * * * * *

“Mr. Cundy has the advantage of a mile or two in point of distance over Mr. Stephenson; and we are some six miles shorter than Mr. Stephenson, if he is to go to his miserable terminus at

* A garbled report of his speech occupied above five columns of the *Morning Herald* of May 20th, in small print; and, strange to say, every word which told for Cundy's line was diligently excluded. How much both the other competitors are afraid of its having a fair chance, by being fairly brought forward, is demonstrated by this; and by their anxious resort to legal technicalities and parliamentary forms, to shut it out from public hearing and consideration. Our quotations from Mr. Joy's speech are verbatim from Mr. Gurney (the short-hand writer's) report, prepared for the Committee and the House.

Nine Elms,* and some eleven or twelve, if he dares to take the course of getting to London Bridge by a junction at some point or other with the Croydon railway. * * *

“With regard to Mr. Cundy’s line, I will concede (for I am quite willing to concede any thing that justice requires) that it has one advantage over both of us, in the fact that tunnels are altogether avoided. That the tunnels on our line are not more formidable than those on the line of Mr. Stephenson, I am prepared to shew. They are longer, no doubt; but I am prepared to shew that, even in point of tunnels, Mr. Stephenson has no advantage over us. I am willing to admit at once, that to get rid of tunnels altogether, if that is the single point of comparison, is an advantage, and a very great one. I am, however, prepared to shew, that the tunnels on our line are not so bad as those on Mr. Stephenson’s, and that they are not bad enough to make it at all worth while to go round, as both Mr. Stephenson and Mr. Cundy do. * * *

“I think Mr. Cundy’s is a better line than Mr. Stephenson’s, for it has no tunnels; I think it better, because it is a mile or two shorter; and I think it better, in being straighter; and, while Mr. Stephenson is talking against a line which, I was going to say, is ten times as straight, but which, in fact, is almost mathematically straight as compared with his own, let it be remembered that, as against Mr. Cundy, Mr. Stephenson is bound to make a very strong case indeed. If you will look at the little map, which is a very good representation of the comparative merits of the two lines, with the single exception of the nine-mile embankment, you will find that Mr. Cundy’s, as compared with Mr. Stephenson’s, is a straight line, and that Mr. Stephenson’s has windings and turnings in his line, as if he had laid it down in the most picturesque manner possible as a landscape-gardener would. Nothing can be more beautiful to the eye than a gracefully winding curve, but it is exceedingly inconvenient for a locomotive engine. * *

“In the case of Mr. Stephenson’s line, he carries you through a marshy, unwholesome, disagreeable, and inconvenient country, as compared, not only with ours, but even with Mr. Cundy’s. I say

* “Nine Elms, which is neither in the east nor the west end of the town, but an unhappy medium between the two, and at a very awful distance from either.”—*Mr. Joy’s Speech.*

when you have that sort of disadvantage on the one side, and no one counterbalancing disadvantage on the other, it is to my mind curious, not that Mr. Stephenson should be able to maintain for some minutes, or days, or weeks, the line which he has acquired. I will not use any other word ; or, as it is said by Sheridan somewhere, “ Not a translation, not stolen, only borrowed from the French ”—a line which he has not stolen, but only borrowed from Mr. Cundy. A line which he has taken from Mr. Cundy by the fairest means, no doubt. I believe that almost all great disputes originate in those two words *meum* and *tuum*, and so it is here ; Mr. Cundy claims Mr. Stephenson’s line as his own, and says, that Mr. Stephenson has robbed him of it ; and Mr. Stephenson asserts, that it is his.” * * * *

“ I will steer a middle course, and I will endeavour, in the first place, to shew how erroneous are the expectations which are held out by my friend, Sergeant Merewether ; how erroneous has been the adoption of a part of those errors by my friend, Mr. Talbot ; and how wisely my friend, the Sergeant, abstained from one or two topics to which he did not think it quite so well to advert. For instance, he did not advert to the subject of tunnels, because, as he knew that Mr. Cundy’s line, in which there are no tunnels, was coming forward, or, as he feared, it might come forward, he did not think it expedient to say any thing against ours ; and if any honourable member of the Committee will take the trouble to look back to the report of his luminous, or voluminous speech, or to the evidence which followed it, he will find that the learned Sergeant did not even *venture to touch upon the subject of tunnels at all, for he knew that in that respect he was as ill off as we were ; and when Mr. Cundy really survives to fight the battle, you will find towards the end, that Mr. Talbot, who has no longer the fear of Mr. Cundy before his eyes, endeavours to shew that Mr. Stephenson’s tunnels are not of much importance, though Mr Cundy has none ;* and he endeavours also to shew, that ours are by far the worst as compared with Mr. Stephenson’s. *My friend, Sergeant Merewether, having the fear of Mr. Cundy’s no tunnels before his eyes, did not glance at the subject ;* and now Mr. Talbot says, that ours are worse than his. Now, I feel confident that I shall be able to satisfy the Committee upon the evidence—unless I most grossly deceive myself—that even in point of tunnels, Mr. Stephenson has not any

advantage worth naming over Sir John Rennie's line. If I do that, then the real question will be, whether a journey of 49 miles is not better than a journey of 55? or whether, in consequence of the single advantage which Mr. Cundy has, of avoiding tunnels, he being liable, though not in so strong a degree as Mr. Stephenson is, to the observation as to making Shoreham his main point instead of Brighton. Whether Mr. Cundy's line, in consequence of possessing that single advantage of having no tunnels, is to be considered as the successful competitor of both of us. * *

"It is monstrous that when a line is called 'Mr. Stephenson's line,' which means, of course, the elder Mr. Stephenson's, they should only put into the box his son, Mr. Stephenson himself not being absent on any other business, but literally sitting at his son's elbow and occasionally prompting him, but not daring to put himself into the box, and to subject himself to a cross-examination. My friends knew they could not venture to call their own engineer. If Mr. Stephenson is not the engineer upon their line, I should be glad to know who is. The estimates laid before Parliament are not signed Robert, but George Stephenson; and Mr. George Stephenson has done for this line all that his name could do, and really nothing more. May I have a right to assume that he has done considerably less, because I think the value of their line must fall very considerably in the estimation of all impartial and candid men, when they see that Mr. Stephenson the elder, who signs the estimate which goes before Parliament and the public as the engineer of the line, sits in the committee room at the elbow of his son during hours of examination, and never dares to put himself into the box. What would my friend have said—what would the Committee have said, if we had not called our engineer, Sir John Rennie? What was said by my friend, Sergeant Merewether, when he thought that the promoters of Mr. Cundy's line were not going to call that gentleman? 'You dare not call your own engineer—where is Mr. Cundy? Do let us get hold of him.' They would not be content with Mr. Mills and the other parties who were called, but they would have Mr. Cundy in his own person. They had no difficulty in getting Sir John Rennie, and I must say, that when we did call him, a witness more unfairly treated I never had the misfortune to see. * * *

"I say that, as Sir John Rennie's line goes through a considerable portion of deep cutting and severe engineering work, the nature

of the country will not admit of those deviations to the right and left; and that beautifully circuitous course which Mr. Stephenson has taken round Mr. Cundy's, Mr. Stephenson could not do that with Sir John Rennie's line; and, therefore, being called on to decide between the two, and being eventually, of course, by no fault of his own, but by the inevitable pressure of the directors, somehow or other obliged to adopt one of them, he takes Mr. Cundy's line, from which he can deviate, and, by making a little alteration in it here and there, claims it as his own. My friend, Mr. Waddington, made a very humorous comparison between the conduct of Mr. Stephenson and a gipsy who stole the child of another person, and disfigured it that he might pass it for his own. With respect to Mr. Cundy's line, the face of the country there did admit of these deviations, but Sir John Rennie's did not. * *

"I am anxious for fair play to all conflicting parties. I do not say that the Brighton Railway Company ever felt themselves called on to make such an offer,* but I do say it would well become them to make it; and I say that, after all the evidence which has been laid before this Committee, a case has been made out which calls on somebody, somewhere, to do something like justice to Mr. Cundy. I feel confident that the Committee will not entertain with greater respect the evidence of such a person as Mr. Stephenson, from the manner in which he is proved to have treated his rival, the party whose line he has adopted: so far, and no further, do I wish to press this into the service. My friend may sneer, and say that, if I do not take care, I shall elevate Mr. Cundy's line into a position so high that I shall defeat my own; but I hope to do that which is just and fair between all parties. I have never said any thing having a tendency to shew that Mr. Cundy's line can be for one moment compared with our direct line; but I do say, that Mr. Stephenson's line is prejudiced to this extent, that it has not yet been satisfactorily explained how it is that there is such a thing as Stephenson's line in the world. * * * * *

"I think I have not exaggerated or misrepresented Mr. Stephenson's case, when I say that it rests on Robert Stephenson, who rests on Mr. Bidder, who rests on three checkers, who have not been called before you. As to the soil, there have been no borings. That was beneath Mr. Stephenson, who only casts a bird's-eye

* An offer of 12,000*l.*, about which there was some dispute.

view across the country, and takes Mr. Cundy's suggestions as improved by Mr. Bidder, who is answerable for the precise location of the line—I say, that is quite enough to shew even that Mr. Robert Stephenson has improperly lent his name to this project: but if it is to be considered that his father's name has been lent to it, it is really quite monstrous. It is something very like a fraud on parliament and on the public to treat this as Mr. Stephenson's line. It is not Mr. Stephenson's line; Mr. Stephenson has no more to do with it than I have. When I speak of Mr. Stephenson, I allude, of course, to Mr. George Stephenson, the father; but Mr. Robert Stephenson knows very little more, except that he has adopted Mr. Bidder's calculations. * * * *

“The one great difficulty in Mr. Cundy's line is his nine-mile embankment, which has been in part explained away. But I say, that I would not willingly, for the sake of advancing Sir John Rennie's line, state an untruth, or use an unfair weapon against an adversary. * * * *

“The Committee will not forget that it is in evidence, that Sir John Rennie is the engineer who is entitled to the credit of having projected the present Manchester and Liverpool line, which is now called Stephenson's; you have it in evidence that Mr. Stephenson, upon whose name you are now called on to rely, introduced the Manchester and Liverpool one year, when parliament turned it out; and that the line now going by the name of Mr. Stephenson was planned by Sir John Rennie, and not by Mr. Stephenson. I hope that here the result will not be, that as the line between Manchester and Liverpool is called Mr. Stephenson's, Mr. Cundy's line between Brighton and London will be called Mr. Stephenson's also.”

Fas est ab hoste doceri:—from the honest admissions of the learned counsel for Sir John Rennie, there is much to be learnt. If the Committee, before whom he pleaded, were not to be taught, it is impossible to doubt, that the Legislature and the Public must be taught, that the line *without a tunnel is, in every respect, the preferable line*; whilst the line, *umpirically and empirically* pirated from it, is not only stained

with a dishonourable origin,* but has been prosecuted with all the appliances of intrigue and corruption ; deviates from its prototype merely as a colourable pretence, and always disadvantageously ; is infested with the same nuisance of tunnelling which is the most solid objection to Rennie's shorter course ; and, finally, cannot be carried into effect, without such a profuse addition to already profligate expenditure, as will increase the total cost by several hundred thousand pounds above the estimated million sterling of Mr. Robert Stephenson !!

In a summary, to render plain to every understanding the state of an interesting question, which has been very adroitly complicated and mystified, we do not deem it necessary to enter into the details that have been pressed into this service. The leading features of the case are so prominent, and the leading *data*, on which the superiority of the line without a tunnel rests, so irresistible, that it will be enough, very briefly, to allude to them.

Sir John Rennie's pretensions are founded on his having the most direct and shortest line, and the best terminus, at London Bridge. But these he has to obtain at the sacrifice of several miles of tunnels, the risk of steep planes, and curves of appalling peril, and a junction with the Greenwich Railroad, altogether destroying the independence and unity of his own, and fraught with monstrous inconveniences, and the certainty of delays and dangers from the collision of separate trains, within the last five or six miles of our crowded capital.†

* In his evidence, Stephenson endeavours to shift the ignominy of this transaction upon the Committee. He says he recommended Mr. Bidder to them to survey the line, and, by some chance or other, his own seizure or adoption of it followed !!!

† This line was described at a public meeting, at Brighton, to be "a series

On what Mr. Stephenson's pretensions rest, it is more difficult, without the fear of libel, to describe. Mr. Joy, indeed, might safely, as a counsel, charge him and his supporters, with "squibbing and falsifications, industriously put forward through the press;" but we are not protected by gown and wig. What we may notice, therefore, is, simply the merit of having appropriated about forty miles, or four-fifths of his whole distance, of another man's plan, submitted to him as a referee; and not adopting the whole of it, or as Peter Pindar has it, in his Rhymes to Royal Academicians, "stealing the whole dog." We will also allow him the skill and talent displayed in the introduction of tunnels upon a line; which tunnels he expressly condemned in his own Report, and which Mr. Cundy has shewn, can be done without. The Report, to be sure, was aimed at Sir John Rennie; and Mr. Cundy was thought to be too poor and too unfriended a person ever to interfere with the schemes of the reporter. The gratuitous and unnecessary engrafting of the tunnels, afterwards, therefore, deserves less praise for ingenuity than might at a first glance appear. His tunnelling at Epsom, where Mr. Cundy, from having a lower level, dispenses with the nuisance, is an original idea, the opposite to improvement; and beyond Leatherhead, where he descends into low ground, to overcome the hills in Norbury Park, and above the Punch Bowl, his tunnels are equally luminous and un-called-for darkneses. That he has limited their number to

of nuisances from Croydon to Brighton, in dikes, through five miles of tunnels, and upon high embankments; *that*, upon the only level of eleven miles it possessed, being actually twenty-five feet high. That its terminus, on Rose Hill, would require to go four miles into the sea, at a descent of 1 in 100; and, moreover, that the line, altogether, was only intended as a stepping-stone, to take Brighton on the way to Newhaven, and make the latter the harbour of Sussex." These, at any rate, are serious points for the people of Brighton to weigh; and they were not contradicted, or answered by Sir J. Rennie's party.

four, and made them shorter than Sir John Rennie's, are the remaining deserts, which may avail him in his comparison with that gentleman; but, in regard to Cundy's line, are nothing but gross deteriorations, and formidable objections. Upon the means adopted to influence public opinion, and obtain parliamentary countenance in favour of his design, perhaps some light may be shed in the few pages which follow.

The third line, as appears from all that precedes, claims preference on the ground of priority, utility, and the absence of tunnelling. Against it there has not been a single objection urged, except that it must have an embankment of several miles, which would cost a considerable sum, and might not be executed so speedily as its rivals assert they could finish their works. We throw overboard, as unworthy of refutation, Mr. Stephenson's suspicions and insinuations* that this line had not been sufficiently surveyed, *et cetera*, *et cetera*; the one real question, the subject affecting the

* Their beautiful jesuitry is admirably exposed by Mr. Hill, who *demonstrated* that Stephenson's accusations against Mr. Cundy were either involuntary or wilful errors of his own: but he needed some excuse for the robbery of line which he contemplated, and his conduct is finely illustrated by the annexed extract from his report on the Rennie and Cundy designs.

"In spite of the errors contained in Mr. Cundy's plan and section, I cannot help being of opinion that the district, of which they profess to shew the levels and direction, is deserving of a more rigid examination; since, even if there should (which Mr. Mills has proved there did not) exist errors to the enormous extent of 60 or 80 feet in the height of the summit, the balance of the inclinations will be still left decidedly in its favour, whilst the general surface of the country, by being more in the centre of the leading valley, cannot require the excavations to be of more than ordinary magnitude, whilst the other advantages of locality and *avoidance of tunnels* remain. Moreover, it is not unreasonable to suppose that the same want of attention displayed in the getting up of the plans, may have operated in the more difficult problem of making the most of the country examined." How fair, how candid, how liberal, how honest!

public interests is, even were the embankment to the exaggerated extent attempted to be represented, would it not be infinitely preferable to the tunnels of the other lines? There is not an unbiassed man in Sussex and Surrey who will not answer, "infinitely preferable." Then, again, as compared with Stephenson's, Cundy's is the direct and shorter line; it can terminate where most beneficial to Brighton, for it has no private property or interests at Hove to improve there; and its radius from either point, in one grand sweep, up to the highest intermediate and middle distance, and thence descending to the journey's end, free from short and sharp curves, is, in engineering estimation, a most able and splendid advantage.

Still, however, we wish to offer a very few remarks on the subject of tunnels before we come to our conclusion. Mr. Stephenson tries to reconcile the public to these dangerous nuisances, by asserting that, by the use of coke instead of coal, his coke-hole near Dorking, of more than half a mile in length, would be perfectly pleasant, salubrious, and a sort of enchanting variety from air and sunshine. Other engineers, on the contrary, fancy that it is likely to tap the springs in that neighbourhood, so as to become almost a quicksand; and that, whether becoked or becoaled, the stagnation of mephitic gases, and the aggregation of large water-drops to descend on the passengers during their gloomy transit, cannot be prevented.

A witness examined before the Committee, when asked if tunnels would not be disagreeable and dangerous, which, to such persons as are in the habit of visiting Brighton, consisting chiefly of females and families, and invalids they must especially be, replied, that he had "no formula to try the nerves of people!" But, begging his pardon, though the answer might be a very pertinent one for an engineer with

nerves of iron, this formula for trying the nerves is the paramount desideratum on this line of road, and, unless it is made the test for deciding the question, Brighton will be ruined, and the Railroad, in a very few years, be an utter failure. For it is persons with delicate nerves who fill the lodgings and houses of Brighton, and consume the merchandise carried thither; and, if their nerves are not consulted, the consequence will be the establishment of other watering-places on the coast, which can be approached without shock, annoyance, injury, and danger, from tunnels.

We shall not touch upon the subject of traffic, which is now under the consideration of the Committee: suffice it to state, that (as is stated in Mr. Stephenson's report), by passing nearest the most populous towns and places on the route, Mr. Cundy maintains his superiority in that respect. Epsom races alone would produce a large sum to augment the revenues of the year.

Having now, we trust, pretty clearly shewn which is the *best* line between London and Brighton, and, consequently, the line which *ought to be carried* into effect; we shall trespass but a few minutes further on the reader, to exhibit a supposititious case of how the second best or the worst line *may get to be adopted*.

In an excellent speech in the House of Commons, made by Captain Wemyss about a month ago, and loudly cheered by the members present, that honourable gentleman reprobated the constitution of parliamentary committees, and contended that they were the most partial, unjust, and inefficient of all the tribunals in this country. This doctrine met with general assent, and there is every reason to suppose that a very needful alteration will immediately be made in respect to them. The body of the representatives of the people may have been reformed; but what signifies the body, if the limbs

are left distorted and palsied, and all the healthful functions of subordinate parts impeded by rottenness and disease!

While they are so, the *recipe* for procuring sanction to the worst railroad, or any other job, is not so desperate as might be imagined. For example:

Steal the mind of another person; adopt his ideas; abuse his proceedings; misrepresent his plans as visionary; keep back his documents till you have matured your project and arrived at fifteen pounds premium, when you may suppose he can be despised as harmless; pretend to improve on what you have stolen, and, gipsy-like, disfigure it to bolster up that pretence; unite with a strong moneyed interest on the Stock Exchange; render the design the medium for gambling in shares, without caring a jot for its ultimate accomplishment; be therefore reckless of expenditure, as it will not fall on you, but on those to whom you succeed in selling; and, above all, procure the assents on the line in a manner to render your course through a Parliamentary Committee the most easy and commodious.

This outline may suggest an advisable and likely method, but minor details are not to be neglected.

Having got the ear of a majority of a Committee, you may daily sit beside them, earwig and assist in their deliberations (as Mr. J. Lyon Goldsmid has done throughout the Brighton investigation), while your opponents are in their proper places, on the outside of the bar. Excellent dinners and entertainments are good in their way. An active whipper-in, to send members to vote when necessary, is indispensable. If Epsom races should happen at the time, any number of such members (and not Irish members either) as like to see the Derby, may be induced to *pair off on three lines!* so that, on the whole, you may, as far as Committee work goes, reckon yourself tolerably secure of a division in your favour.

But after the Committee has made its Report, comes the House ; and it is also extremely desirable to propitiate it, or, at least, make zealous friends of as many of its members as you can, and particularly of those belonging to the counties through which your road passes ; for their opinions are listened to with deference on a matter which may seem to concern their constituencies, and have much weight with members who take no interest in the question, and look to them for similar complacency when their turn comes. The most effectual way of accomplishing this, perhaps, is, as you are rich in the instalments paid on shares, to be lavish in your purchase of all lands and other property upon your line which belong to members, their relations, connexions, or agents — not forgetting to give the latter nice extra sops for themselves. Thus, when speculating on shares to the amount of some 300,000*l.*, you can well afford to pay ten times the value for such lands and property as may help you to your end. You may give 130*l.* per acre for land let at 8 shillings per annum, if it belong to a lady related to a local member. You may give 8000*l.* or 9000*l.* for a useless water-cut, if it belong to a county member. You may purchase the lands of a duke at thrice their worth per acre, say at 300*l.*, and secure him by lucrative tolls on bridges, besides subscribing his lawyers 10,000*l.* in shares. Indeed, you ought to manage it thus from one extremity of the line to the other, and you may depend upon it you will find your interest in the transaction.

But why should we be so particular ; since surely the sense of every well-informed and right-intentioned person must suggest these and other beneficial courses for the public advantage.

It is true that the result may be exceedingly unjust and oppressive, as far as other parties and individuals are engaged in pursuing the same object. *A. B.*, for instance,